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RESEARCH ARTICLE

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Nursing students' motivation regulation strategies in blended learning: A qualitative study

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Abstract

Although there is a strong body of evidence showing that motivational factors are critical components of self-regulated professional learning and commitment to work, little is known about nursing students' motivation regulation during their studies. The aim of this study was to gain a deeper understanding of nursing students' motivation regulation (MR) strategies and factors contributing to their reported use along their 3-year study path in a blended learning environment. A purposeful sampling was used to select 12 undergraduate nursing students, who exhibited different MR profiles and had completed almost 3 years of study in a BL degree program. A qualitative, deductive, content analysis was used to depict students' experiences from their retrospective recollection in the interview situation. Seven motivation strategies were identified: environmental structuring, self-consequating, goal-oriented self-talk, efficacy management, emotion regulation, regulation of value, and interest enhancement. Individual and situational factors were found to enhance and to sustain the use of appropriate MR strategies. The students exhibited versatility in their use of MR strategies, which were related to the study phase. These findings regarding nursing students' MR strategies should be considered in the development of nursing education programs and the implementation of improvements that contribute to professional and self-regulated learning in BL programs.

KEYWORDS

blended learning, motivation, nursing education, nursing students, self-regulated learning

1 | INTRODUCTION

Studies have shown that nursing students and recent graduates frequently suffer from a lack of motivation and high levels of stress during their studies and work (Bartlett, Taylor, & Nelson, 2016; Flinkman & Salanterä, 2015; Riley, Collins, & Collins, 2019). Motivational factors were found to have the greatest effects on nurse retention, which has been acknowledged as a critical challenge in meeting the global healthcare needs (Buchan, Shaffer, & Catton, 2018; Efendi, Kurniati, Bushy, & Gunawan, 2019). Motivation regulation (MR) skills are necessary for addressing these challenges, developing professionalism, and completing higher education programs (Linnenbrink-Garcia et al., 2018).

Self-regulated learning (SRL) and MR are essential for developing the motivational and regulatory competence to complete professional nursing programs, to participate in professional development, and to accomplish a range of demanding tasks (Sulosaari et al., 2015).

However, few studies have focused on nursing students' MR and the contributory factors. The increased use of blended learning (BL) in nursing education requires students to take more responsibility for their learning than they would in traditional education. Accordingly, exploring nursing students' SRL and MR, particularly in this environment, has become increasingly important.

1.1 | Background

1.1.1 | Motivation enhancement with SRL

The motivation to learn is crucial for successfully completing a degree and preventing burn-out in a career (Boekaerts, 2016; Linnenbrink-Garcia et al., 2018). Motivation is not a permanent individual trait. Rather, it is a dynamic state that can be actively influenced by situational factors, for example, pedagogy and interaction, and by the nursing students through their active regulation of motivation during learning (Engelschalk, Steuer, & Dresel, 2017; Järvenoja, Järvelä, & Malmberg, 2015; McComb & Kirkpatrick, 2016; Sakurai, Parpala, Pyhältö, & Lindblom-Ylänne, 2016). SRL refers to the intentional monitoring, activating, and sustaining behaviors as well as the cognitions, motivations, and affects that are oriented toward achieving learning goals (Pintrich, 2004; Zimmerman, 2011). Students who proactively self-regulate their learning are more likely to set, to monitor, and to assess their goal processes, to implement effective learning strategies, to establish productive learning environments, and to maintain self-efficacy for learning (Zimmerman, 2011). Self-regulated learners are highly motivated (Wolters, 2003). The elements of MR can be considered as distinctive components of SRL (Wolters, 2003).

Through the regulation of motivation, nursing students can adjust and direct their motivated learning and purposefully develop learning profiles that contribute to their learning and motivation throughout their education (Salamonson et al., 2016; Smit, de Brabander, Boekaerts, & Martens, 2017). Self-regulated motivation can be facilitated through several strategies, such as environmental structuring (e.g. reducing the probability of distractions during study), self-consequating (e.g. creating self-administered consequences to influence motivation), and regulation of the value (e.g. thinking of the usefulness) of assignments (Wolters, 2003; Wolters & Benzon, 2013). The appropriate use of MR strategies, such as mastery or a performance-approach to self-talk, self-efficacy, and goal orientation, has been associated with higher academic achievement (Dörrenbächer & Perels, 2016; Schwinger & Stiensmeier-Pelster, 2012). Studies have suggested that they play a crucial role in teaching SRL skills (Dörrenbächer & Perels, 2016; Schwinger & Stiensmeier-Pelster, 2012). Students have been found to implement motivational strategies differently (e.g. effectively or ineffectively) in challenging situations and the various phases of their studies (Barnard-Brak, Lan, & Paton, 2010; Engelschalk et al., 2017).

MR is a multifaceted phenomenon that contributes to students' beliefs, appraisals, learning experiences (short-term effects on current learning situations and long-term effects on choices and goals), and strategies throughout their studies.

1.1.2 | Blended learning in nursing education

BL has been described as the appropriate combination of face-to-face teaching and online approaches and learning technologies that offer synchronous and asynchronous teaching tools and pedagogical methodologies (Dziuban, Graham, Moskal, Nordberg, & Sicilia, 2018; Garrison & Vaughan, 2013). In recent years, the use of BL in nursing education has increased exponentially (McCutcheon, O'Halloran, & Lohan, 2018). It has been shown to facilitate academic performance and to add pedagogical value in terms of motivation and attitudes, student satisfaction, knowledge, and communication skills (McCutcheon et al., 2018; Shorey et al., 2018).

BL is characterized by considerable learner autonomy (Broadbent, 2017). It requires a greater reliance on SRL and, thus, the motivation to implement and to regulate SRL skills (Broadbent, 2017; Greene & Azevedo, 2009). BL provides students a greater level of independence and control over their learning (Hsu & Hsieh, 2014). Thus, it has been considered to facilitate metacognitive skill development and collaborative learning (Hsu & Hsieh, 2014). The enhancement of student motivation through strategies such as achievement motivation (attainment and utility value) has been associated with good SRL skills and successful learning in BL environments (Vanslambrouck et al., 2019).

However, even in higher education, all students are not capable of taking control of their studies and successfully regulating their learning (Koivuniemi, Panadero, Malmberg, & Järvelä, 2017). This can diminish the potential advantages of BL and pose severe challenges for successfully completing a course of study and sustaining motivated learning. Personalized support for developing and sustaining SRL skills is beneficial because of the heterogeneity of students' SRL abilities (Broadbent, 2017; Vanslambrouck et al., 2019). Educators must therefore gain sufficient insights into the students' SRL and MR skills to adapt their teaching methods and materials to provide students with adequate support in BL programs (Dörrenbächer & Perels, 2016). Few studies on BL and SRL have focused on nursing students' MR.

1.2 | Study aim

The aim of this study was to gain a better understanding of nursing students' MR in BL programs. It explored the students' MR strategies and the contributing factors to these strategies that they applied along their 3-year study path. Gaining a better understanding of the use of MR strategies can inform the development of nursing education programs that promote student motivation and professional commitment during studies and later on in work. Such programs would be based on the European Union's high-quality training requirements for general care nurses (Directive 2005/36/EC; Directive 2013/55/EU).

The following research questions were posed:

1. Which motivation regulation strategies do nursing students use in blended learning environments?

2. Which factors contribute to the enhancement and continued use of motivation regulation strategies?
3. What kind of motivation regulation strategy use can be identified during the study path?

2 | METHODS

2.1 | Study design

This qualitative study utilized principles from phenomenological approach and applied qualitative content analysis to gain a deeper understanding of the lesser-known MR of undergraduate nursing students (Creswell, 2013). The study relied on previous research on the MR strategies of students in higher education (Wolters, 2003; Wolters & Benzon, 2013). It focused on the MR through the discovery and interpretation of the meanings that nursing students give to their lived experiences during their studies (Creswell, 2013; Maggs-Rapport, 2000; Webb & Welsh, 2019). The research process started with the researchers' understanding of MR in learning. It continued to the inquiry and the reflection, which included comparisons of the themes that had emerged, in order to identify the commonalities in the nursing students' MR (Maggs-Rapport, 2000; Webb & Welsh, 2019).

2.2 | Data collection and sampling

The data were collected at the University of Applied Sciences (UAS) in Finland during Spring 2018. The participants were undergraduate nursing students (n = 12) in the BL program. The inclusion criterion for the purposive sample was that the volunteer students represent four MR profiles according to the identification in the prior studies: permanent high-level MR, permanent less-developed MR, profile changing from high-level to less-developed MR, and profile shifting from less-developed to high-level MR (see Appendix 1; Mäenpää, Pyhältö, Järvenoja, & Peltonen, 2018; Mäenpää, Järvenoja, Peltonen, & Pyhältö, 2019).

Participants were contacted by email or text message and asked to reply with a written message regarding their willingness to participate. Only one of the contacted students refused because the student had graduated earlier, was working, and had moved far away from the university.

A retrospective approach was applied to the interviews. The student participants were asked to reflect on their entire 3-year study path. Before the interviews were conducted, they were asked to provide a visualization (e.g. informal timeline) of their study path and to identify the crucial events, negative and positive, that had influenced their learning. The interviews considered the students' visualizations and the influence of the identified events on their MR. The themes that emerged in the interviews reflected their individual strategies for self-regulating their motivation (Wolters & Benzon, 2013). The semi-structured interviews included 10 supportive questions focused on MR (see Appendix 2). The participants were not asked to report their use of any specific MR strategy. However, their overall tendency was to respond to motivational challenges in ways that would sustain or improve their motivation (e.g. You said that you were giving up on the task. What did you do to keep studying?). Two pilot interviews were conducted to test the validity of the instrument prior to data collection.

One of the researchers (the first author) who worked as a lecturer and student counselor at the UAS conducted the face-to-face interviews. They were held in a quiet room at the university or practical placement locations (clinics). The interviews lasted 45 to 100 min, and they were digitally recorded. After each interview, the interviewer made brief notes about the general impression of the interview. The interviews were transcribed in their entirety.

2.3 | Ethics

The study conformed to the ethical principles of research in the humanities and social and behavioral sciences and the ethical review guidelines in Finland (Finnish National Board on Research Integrity, 2009). Research and ethical approval was obtained from The University of Applied Sciences, Director of Education, Research, Development and Innovation in Health Care and Nursing Education in Finland (26102015). Before the interviews, the participants were informed about the study and their rights, including their voluntary participation, and the researcher's commitment to ensuring anonymity and confidentiality. They were informed that their decisions surrounding their participation would have no consequences for their studies. The participants were informed about the possibility of contacting the researcher on any matters related to the study. The researcher transcribed the digitally recorded interviews verbatim and de-identified the participants in the written transcript by using only their participant identification numbers.

2.4 | Analysis

A deductive approach was applied to the qualitative content analysis of the interview data (Elo & Kyngäs, 2008; Graneheim, Lindgren, & Lundman, 2017; Vaismoradi, Turunen, & Bondas, 2013). The analysis involved rough data categorization, coding, new categorization, identification of frequencies, conclusions, and interpretation of the results (Elo & Kyngäs, 2008). The transcribed interview texts were carefully read and re-read by the first author, who was familiar with the participants' learning environment, cultures, and contexts. The analysis proceeded through six consecutive phases (see Figure 1). A more detailed description of the analysis procedure is presented in Appendix 3.

The analysis started with locating meaningful extracts from the whole transcribed interview data corpus. These extracts involved students' descriptions and elaboration of positive and negative experiences that could be related to MR theory (Wolters, 2003; Wolters & Benzon, 2013). To focus on the enhancing and sustaining of the MR experiences, only the positive episodes were excerpted from the

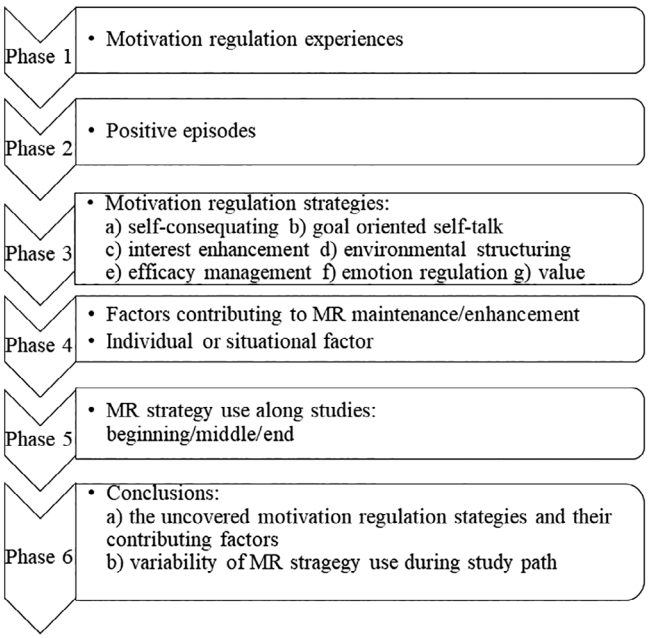

FIGURE 1 The phases of the analysis

interview data corpus. The episodes were found positive, if they included descriptions, where student stated, explained or described that the event or behavior increased or supported their MR. The positive episodes were analyzed, condensed and combined on the basis of the repetition and similarity of the consequences (e.g. personal goal setting, peer support). The episodes were placed in the relevant MR strategy categories (see Appendix 3) in accordance with the MR theory (Wolters, 2003; Wolters & Benzon, 2013). The frequency of the occurrence of the episodes in each category was counted.

To gain an understanding of the individual and situational factors that contribute to enhancing and sustaining the use of MR strategies, the episodes in each MR strategy were analyzed individually to identify the supporting factors. The individual bases (e.g. students' beliefs) and situational bases (e.g. learning environment) of the factors were analyzed, and the frequency of the occurrences was counted. To explore the temporal variability of the nursing students' use of MR strategies, the student's study phase (*beginning*, *middle*, or *end*) at the time of each episode was indicated alongside the descriptions of the positive (enhancing or maintaining) episodes. The students were classified into groups on the basis of the phases with their most frequently described to use MR strategies.

After the completion of the five analysis phases, the conclusions and interpretation were reached. The results were integrated and considered in relation to the research questions and revealed framework for the MR strategy categories.

2.5 | Methodological reflections

The purposive selection of student participants who were representing the different existing MR profiles with similar lived experiences in a 3-year BL program was considered to provide a sample, that allows to increase the understanding of the use of MR strategies in this study environment (Creswell, 2013). MR profiles identified in previous studies (see Appendix 1) provided a basis for interview participation selection. Selecting participants from each profile was considered to accomplish representation of different study pathways. To provide rich and pertinent data and to ensure data saturation, two to four participants representing each of the MR profiles were interviewed (Tong, Sainsbury, & Craig, 2007). This provided a solving grounding for participants selection, and yet put emphasis on the subjective study experience, especially MR and factors promoting it, through rich qualitative interview data (Creswell, 2013).

To ensure trustworthiness, the participants were interviewed with similar setting and by one person in authentic learning environments at the campus or at the practical placement locations. The interview protocol (Appendix 2) was followed in all the interviews, but the interviews had no strict orders or forms of questions in order to capture students' own descriptions and reflections of their study paths.

To ensure the credibility and validity of the analysis procedure, several steps were implemented. First, prior to the categorization of the data, each interview was read many times to ensure the data credibility. Second, to assure the reliability of the analysis process the analysis principles, transcript, analysis phases, and coding protocol were reviewed and negotiated several times by all four researchers. The corresponding researcher worked until a consensus regarding the analysis phases, main codes, and categories had been reached. Third, to verify the reliability of the coding protocol, two external researchers who were familiar with qualitative research and the content area but unaffiliated with the study analyzed 23% of the data. Inter-rater agreement was measured with Fleiss' kappa. The kappa value was 0.85 (95% CI = 0.80–0.90, $P < 0.001$), which indicated almost perfect agreement (see Landis & Koch, 1977). To gain a comprehensive understanding of the research questions and to increase the reliability of the results, definitions of coding categories were provided with qualitative examples. In addition, the qualitative results were supported with descriptives; frequencies were used to detect significant meaning in the content analysis (Vaismoradi et al., 2013). However, it must be noted that the frequencies could indicate the importance of the topic, the willingness to talk about it, or the ease in discussing it.

3 | RESULTS

The data comprised the analysis of 12 interviews with undergraduate nursing students (7 female, 5 male). Their ages were 23 to 37 years (mean age 32.5 years). They were near the end of their studies: either about to graduate ($n = 3$) or graduating within 6 months ($n = 9$). Four students fit a permanent high-level MR profile, four fit a permanent less-developed MR profile, two were profile changers who shifted from a high-level to a less-developed MR profile, and two were profile

changers who shifted from a less-developed to a high-level MR profile (see Appendix 1; Mäenpää et al., 2018, 2019).

3.1 | MR strategies and contributing factors

The results indicate that regardless of their MR profiles, which were identified in accordance with the categories established in earlier studies, the nursing students frequently experienced episodes that enhanced their use of MR strategies in the BL setting. The participants reported 438 episodes in which their MR was sustained. They identified seven MR strategies. The use of MR strategies was enhanced and sustained by individual factors (f = 252; e.g. self-efficacy beliefs) and situational factors (f = 186; e.g. peer support).

3.1.1 | Environmental structuring

The most common episodes were related to environmental structuring. The participants reported the factors or actions related to environmental structuring in 115 episodes. The structure of the BL environment clearly influenced the students' readiness and willingness to study. High-quality BL environments and digital learning management systems, interactive online and face-to-face teaching methods, exploratory learning methods, applied learning tasks, a supportive atmosphere, and instructor or supervisor feedback were perceived to enhance and to maintain environmental structuring. Resource management and help-seeking from teachers and other individuals, especially peers, was shown to be crucial in supporting learning and preventing drop out:

- BL was stimulating because we had a lot of instructional distance teaching, video recordings, and online communication. I wasn't left on my own. (Participant 6)
- After I failed the exam, I was about to give up. But my classmates told me to retake it, and then I passed. (Participant 2)

The supportive factors included enjoyable practical training, the program phase (particularly the beginning and the end, impending graduation), specialization courses, engaging curriculum (compact timetable, deadlines), and appropriate workload. The students reduced the possibility of engaging in off-task behavior by organizing quiet places and times for studying:

- At home, I study in a place where I can concentrate. (Participant 8)

3.1.2 | Self-consequating

The participants reported 71 episodes of self-provided or self-administered consequences for their behaviors. Self-consequating was confirmed through the students' reports of practicing self-discipline and perseverance. Self-efficacy beliefs and verbal self-praise were typically used:

- Once I start, I finish. I do not give up. (Participant 5)
- I'm a good writer and experienced practical nurse. I'm sure I'll manage this. (Participant 2)

They also used self-rewarding behavior for task completion. This included self-promises of rewards after work, self-respective thoughts of conscientious performance, and stress avoidance through the timely completion of their studies:

- After I finish an assignment, I can go for a walk. (Participant 6)
- I do not want to fall behind. (Participant 12)

3.1.3 | Goal-oriented self-talk

In 64 episodes, the students reported using goal-oriented self-talk that reflected the desire to achieve performance or mastery goals. The goals for regulating performance were related to achieving high grades, good assessments, successful performance, or on-time graduation; earning credits; or obtaining employment. The mastery goals were associated with achieving personal learning goals, finding the learning process meaningful, and becoming more knowledgeable:

- It was rewarding to notice how many credits I've earned. (Participant 8)
- I want to learn and understand how to work as a nurse. (Participant 4)

3.1.4 | Efficacy management

The students reported 60 episodes that influenced efficacy management, which is associated with the ability to monitor, to evaluate, and to purposefully control expectations and perceptions of competence or self-efficacy for successful task completion. Setting proximal goals for successful task completion and time management was a characteristic. The participants identified their perceptions and actions regarding their self-efficacy for successful assignment completion and effective studying:

- To get the work done, I set my own goals for my daily assignments and divided the work into smaller chunks. (Participant 1)
- I think how much I learn and how effectively I have to study are up to me. (Participant 4)

3.1.5 | Emotion regulation

Emotion regulation was reported in 48 episodes. The students described their positive and enthusiastic attitudes to their studies or graduation as enhancing emotion regulation:

- I was so excited to start studying again. (Participant 7)
- I'm eager to soon become a nurse. (Participant 10)

They also described the role of their personal experiences (e.g. hobbies, family) in their ability to cope with the emotionally challenging phases. Peer support and classmate encouragement were perceived as crucial to overcoming the challenges in their studies:

- I was uncertain about what to do. But there was always someone in the group who cheered me up, and I got things done. (Participant 4)

According to the students, emotional regulation was positively affected by the learning environment characteristics. This included high-quality practical training placements, well-organized BL environments (e.g. interactive teaching methods and functional online learning management systems), supportive feedback (regarding successful completion of assignments or practical training) from teachers and mentors, purposeful tasks, the study phase, and an appropriate workload:

- In the second year, the number of exams was lower and the timetable reasonable, so I felt much more relaxed. (Participant 9)
- After the successful practical training, I felt confident and positive that I had chosen the right field of study. (Participant 10)

3.1.6 | Regulation of value

The students described the regulation of value and the related supportive factors in 42 episodes. They appreciated the utility and usefulness of work and described the role of studying and learning in increasing their competence, deepening their understanding, and providing them with career skills:

- I respect the nursing education that I've completed. It has given me the necessary skills and competence. (Participant 12)
- I think about situations where it would be useful for me to learn a skill. (Participant 9)

3.1.7 | Interest enhancement

The nursing students reported 38 episodes that were associated with regulating interest enhancement. They used several strategies to increase their immediate enjoyment or situational interest while studying. The students' will and desire to graduate and to become nurses typically enhanced their interest. Interesting subjects, engaging teaching methods, and their work methods increased their interest in studying:

- I want to become a nurse, and I need psychiatry in my work. (Participant 2)
- The anatomy textbooks and practical training kept me interested in my studies. (Participant 3)
- The teacher's supportive attitude, feedback, and interactive teaching methods increased my interest. (Participant 11)

3.2 | MR strategy use along the study path

The content analysis indicated that the students could be grouped on the basis of their tendency to emphasize specific MR strategies in certain phases of their study paths. The students were placed into three groups on the basis of the temporal use of MR strategies in the nursing program, that is, MR strategies emphasized at the *Beginning*, *Middle*, and *End*. The groups are presented in Figure 2.

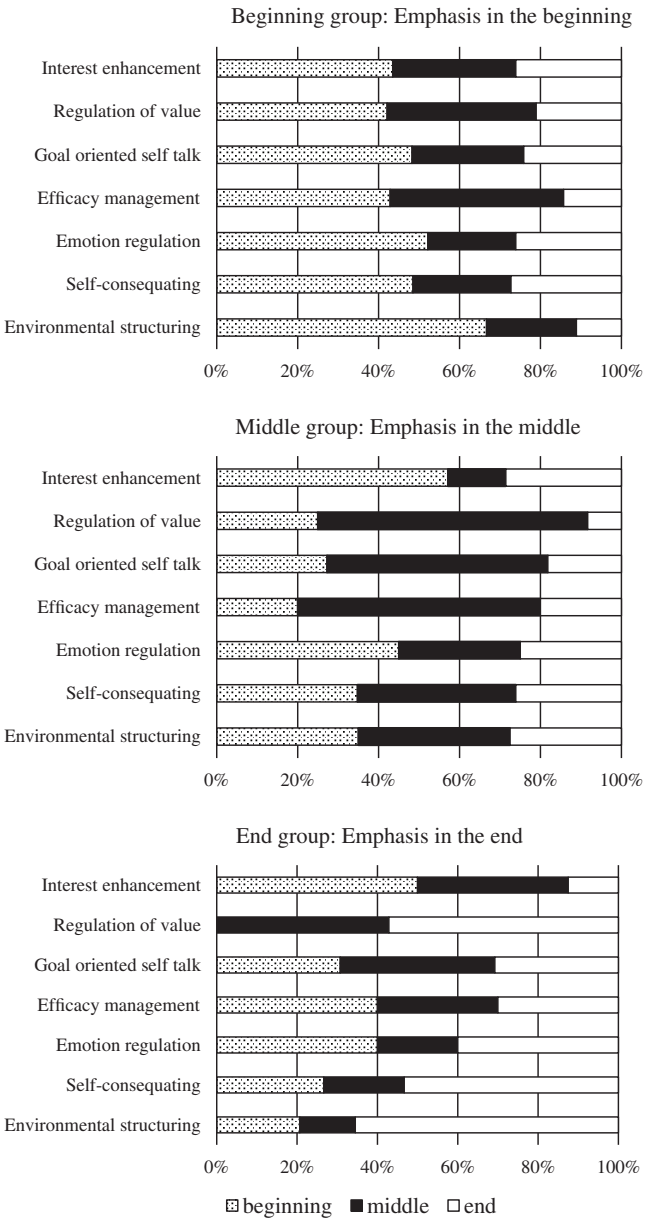

FIGURE 2 Nursing students' motivation regulation groups

The students in the Beginning group (n = 6) highlighted the application of MR strategies at the beginning of their nursing studies. Although they used all of the MR strategies, environmental structuring was emphasized. These students frequently discussed emotion regulation. They perceived the start of a new program as both challenging and exciting. They were highly motivated and pleased with the flexibility of BL and the availability of peer support:

- In the beginning, so much was new. I wanted to keep studying and following my group. We cheered one another on. For me, this kind of BL was a good way to study. (Participant 12)

The students in the Middle group (n = 4) were the most likely to use MR strategies at the midpoint of the program. They typically used the regulation of value, efficacy management, and goal-oriented self-talk. They described the significant role of practical assignments and training in enhancing their regulation of value. They reported frequent struggles with managing practical training and multiple assignments. This led to the regulation of efficacy management. They evaluated their self-efficacy and learning skills through their ability to complete tasks and to set appropriate timetables and proximal goals. Success was important. The students wanted to earn high grades, to progress through the program, to merit with many course credits, and to gain more knowledge:

- I wanted to get good grades, especially from the practical training. I would have lost a lot of motivation if I had got bad grades. (Participant 11)
- I had high expectations for myself. I wanted to get everything done, so I made a schedule. (Participant 9)

The students in the End group (n = 2) reported that they used MR strategies most frequently towards the end of their studies. The most frequently used MR strategies were environmental structuring, self-consequating, and the regulation of value. The specialization courses and impending graduation positively influenced their MR. They were struggling with their theses or last assignments and highlighted their perseverance and self-reinforcement:

- I'm finishing my last big assignments. How rewarding it is to return an assignment! (Participant 9)
- When I persevere, I get my assignments done ahead. It is possible to graduate early, and that motivates me a lot. (Participant 3)

4 | DISCUSSION

This study provides a novel understanding of nursing students' use of MR strategies in a BL environment during their study path. First, the results indicate that the students employed seven MR strategies: environmental structuring, self-consequating, goal-oriented self-talk, efficacy management, emotion regulation, regulation of value, and interest enhancement. These results support those of previous studies on MR strategies (Wolters, 1998, 2003; Wolters & Benzon, 2013). However, emotion regulation, which emerged as a distinct MR strategy, was found to be more important than had been reported in previous studies.

Second, the results show that individual or situational factors often enhanced and sustained the use of MR strategies in BL. The students emphasized environmental structuring, which was typically related to situational factors, such as the appropriateness of the pedagogy, BL strategies, or the study community. The individual factors were typically related to the students' self-administered consequences, such as self-efficacy beliefs and self-discipline, for their own behaviors. The findings confirm those of previous studies that the contributory factors can be individual, that is, stemming from and being actively influenced by the students' beliefs and actions, or they can be situational, that is, related to the learning environment (Engelschalk et al., 2017; Järvenoja et al., 2015; Sakurai et al., 2016). The findings suggest that participation in a BL program can facilitate nursing students' SRL and MR (Hsu & Hsieh, 2014; McCutcheon et al., 2018; Shorey et al., 2018).

Third, the results indicate that all the MR strategies were used throughout the program. On the basis of the emphasized temporal use of MR strategies in the nursing program, the students were placed in three categories: *Beginning*, *Middle*, and *End*. The students in the Beginning group used all of the MR strategies, especially environmental structuring and emotion regulation, effectively. Those in the Middle group typically used the regulation of value, efficacy management, and goal-oriented self-talk. The End group used primarily environmental structuring, regulation of value, and self-consequating. These findings confirm those of previous studies, namely the heterogeneity of MR. The choice of a strategy, the period in which it is used, and the extent to which it is used varies (Engelschalk et al., 2017; Järvenoja et al., 2015).

The results strengthened the assumption that students exhibit diversity in their SRL skills; thus, a one-size-fits-all approach is insufficient for supporting SRL in BL (Barnard-Brak et al., 2010). The results suggest that to adjust, to optimize, and to personalize the support provided in a BL environment, educators should gain an understanding of the different MR strategies for sustaining the students' self-regulative motivational processes along their study path (Broadbent, 2017; Dörrenbächer & Perels, 2016; Dziuban et al., 2018; Vanslambrouck et al., 2019).

Thus, this study has provided new insights, particularly for nurse educators. In addition to highlighting the role of individual differences, the study suggests that the need for and role of MR, in addition to the choice of MR strategies, varies during the course of study. Because the same regulation strategies might not always be purposeful and effective, the accurate selection of an MR strategy requires students to recognize the nature of the need or challenge. Such challenges could be the result of generic contextual and temporal factors, as well as individual needs and differences. This must be considered in the provision of high-quality training for nurses. Thus, the design of a learning environment must facilitate student motivation and SRL.

4.1 | Limitations

Although this study offers significant insights into nursing students' MR, it has several limitations; thus, the findings cannot be generalized.

It had a small number of participants, and they were all students in the same BL program at a university in Finland. Therefore, the findings might have been influenced by institutional and cultural characteristics. Future studies should be conducted with a larger number of participants in a variety of educational and cultural settings.

A retrospective approach was applied in the interviews; thus, the students reflected on their entire 3-year study path. Despite providing a visualization of the study path, the students who were at the end of their studies might have had difficulty recalling previous motivational experiences. However, the retrospective approach allowed them to reflect on their entire study path. It also allowed the interviews to flow easily. Thus, the students' detailed descriptions of their motivational experiences yielded rich data.

5 | CONCLUSION

This study has revealed the MR strategies used by nursing students along their study path. Thus, it has increased the understanding of nursing students' MR processes. It has also identified approaches for enhancing MR in contemporary BL nursing education programs. By considering these findings, educators and workplace supervisors can facilitate nursing students' MR and, ultimately, high-quality professional learning.

Given the paucity of studies on MR in health care education, this study offers an important contribution to the empirical research on MR. The focus on self-reported MR strategy use extends the research on the quality of the MR strategy application.

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CONFLICT OF INTEREST

No conflict of interest has been declared by the authors. Ethical standards were followed in the conduct of the study.

AUTHOR CONTRIBUTIONS

Study design: K.M., H.J., K.P., and J.P.

Data collection: K.M.

Data analysis: K.M., H.J., K.P., and J.P.

Manuscript writing: K.M., H.J., K.P., and J.P.

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APPENDIX 1 A.

Motivation Regulation Profiles

The authors' previous longitudinal study identified four motivation regulation (MR) profiles among nursing students (Authors, 2018; 2019). The permanent *high-level MR* profile was the most common. Students in this category exhibited permanently high levels of regulation of performance goals, regulation of mastery goals, self-consequating, regulation of value, and environmental structuring. The students in the second profile, permanent *less-developed MR*, exhibited permanently lower MR levels on all of the MR scales and accounted for slightly more than one-third of the students in the sample. The two remaining profiles represented the students who *shifted from less-developed to high-level MR* during the program and those who *shifted from high-level to less-developed MR* (from the time of the first measurement to the time of the second measurement). Approximately one-third of the students with less-developed MR at measurement Time 1 had shifted to a high level MR at Time 2. A quarter of those with high-level MR had shifted to the less-developed MR level at Time 2.

Appendix 2

Support questions/Describe or tell how, or give an example:

1. Describe your efforts to learn or study in this situation?
2. What promoted or hindered your learning in this situation and how?

3. What did you do to keep yourself studying in this situation?
4. What helped you to improve your learning/studying in this situation and how?
5. Describe what was important for you in your learning/studying?
6. Describe what kind of aims did you have for yourself in studying and learning?
7. What influenced on the aims you had/or set for your learning and how?
8. What influenced on what you found interesting in studying/learning, and how?
9. What influenced on how useful or meaningful you found learning and how?
10. How did the environment influence on your learning?

Appendix 3

Content analysis phases

First analysis phase

First, the episodes in which the participants described their lived learning experiences that entailed the regulation of motivation were excerpted. The length of the episodes ranged from one to fifteen sentences (Elo & Kyngäs, 2008). The criteria for the episodes were:

1. The participant describes a motivational experience from their learning path.
2. The selected episodes point out something that influenced the student's motivation regulation positively (increased, promoted) or negatively (decreased, hindered).
3. The episode contains an elaborate description that can be interrelated to MR, according to the previous literature. For example student described actions like setting personal goals or thinking of the usefulness of assignments (Wolters, 2003; Wolters & Benzon, 2013).

Second analysis phase

The aim of the second phase of the analysis was to track the episodes that enhanced or maintained the students' MR during their learning path. The episodes that influenced the students' MR positively were selected. For example, the positive episodes described how the students' perseverance or compact timetable helped them to continue studying or complete the tasks in challenging situations.

Third analysis phase

The third phase of the analysis focused on identifying the MR strategies that the students reported. The coding protocol was created first. The codes (themes) were formulated of repeatedly occurring consequences that described what the episodes were reporting about (e.g., setting personal goals, self-efficacy beliefs, peer support, time management). Then, the codes were grouped under the compatible MR strategies from the prior research to form the categories for the analysis (Wolters, 1998, 2003; Wolters & Benzon, 2013). The final coding protocol was formed of seven uncovered categories: 1) *self-consequating*, 2) *goal oriented self-talk*, 3) *interest enhancement*, 4) *environmental structuring*, 5) *efficacy management*, 6) *emotion regulation*, and 7) *value*. The categories represent the highest level of abstraction for reporting the results. To ensure coherence alongside the plentiful data, the coding protocol included a description of the criterions based on the prior MR research and examples of each category, as suggested by several authors (e.g., Wolters, 1998, 2003; Wolters & Benzon, 2013).

Fourth analysis phase

The fourth phase of the analysis included analyzing the formed codes explicitly to determine the pragmatic factors related to MR. First, every described factor that related to enhancing or maintaining a particular MR strategy was noted. The criteria were that the characterized factors exemplify a matter (behavior, thought, or situational factor) that occurs in relationship to enhancing or maintaining the use of the MR strategy. For example, the factor called proximal goal setting enhanced efficacy management: "To get the work done, I decided to study the task in small parts." Second, the basis from which the factors stem (*individual* or *situational*) was analyzed. *The individual* factor was related to individual origin, such as the student's self-provided thoughts, beliefs, or actions and *the situational* factor was related to external matters, such as the learning environment, context, outside rewards, or other people. The frequencies of situational and individual factors were counted.

Fifth analysis phase

One of the aims was to examine the students' MR strategy use in different phases of the study path. The current phase of the study path (*beginning*, *middle*, or *end*) was marked alongside the positive episodes that were described. The students were classified in groups after the phases in which they described the MR strategy being used the most frequently.

Sixth analysis phase

The findings of the analysis phases were concluded by implicating them to the research questions. The results of nursing students' motivation regulation strategies in blended learning environment were interpreted via the revealed motivation strategy categories (environmental structuring, self-consequating, goal-oriented self-talk, efficacy management, emotion regulation, regulation of value, interest enhancement) and factors enhancing and maintaining the use of these strategies and via the MR strategy use along the study phases.